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## OBSERVATIONS ON THE NOCTURNAL HABITS OF THE REDWING.

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THE Redwing (*Turdus iliacus*) has a curious habit of roaming about at night, and, although this is not unknown, it has yet to become part of ornithological literature, and the present notes may perhaps focus the attention of observers on the phenomenon. The movements have been referred to by several writers, all of whom have described them as migratory; but the evidence that I have been able to gather certainly does not justify us in being so confident on this point.

From the time of the bird's arrival in autumn to the end of December, and afterwards at irregular intervals until April, a large number of Redwings are on the wing each night, and frequently make journeys of at least several and probably many miles. We never see them, and only know of the passing of the birds by their voices. The note used is the peculiar piercing monosyllable so familiar to every field student of birds, but this is after all such a needle point of sound that it always passes unnoticed unless the observer has had his attention drawn to it, and is interested in the phenomenon. The call does not suggest any of the noisy migrants that lend so great an interest to our autumn nights, and, although coming with startling suddenness from the dark air, it is not associated with any special bird—it is sometimes attributed to a Bat—and slips from the memory in the way of most other isolated sense impressions, and is forgotten before the next call is heard. The

trained ear recognizes the note instantly, but usually it is recorded as that of a commonplace bird, an obvious migrant, engaged in its normal journeyings.

Redwings roost in company, generally in association with Starlings, and the note is commonly heard as the birds come in for the night. It is a shrill "seep," audible from a great distance, but perhaps the call most often heard through the day is a soft "chup" or "yup" that has no sibilant quality. I think the latter note is confined to the female, but here my observations are not so numerous as I should wish. After many hours spent in watching the birds I am in no position to interpret either the "seep" or the "chup," and do not know their meanings; they may be notes of alarm, or signals, or perhaps exclamations of no import whatever. Occasionally the Redwing uses a harsh chuckle that is almost as loud as the well-known alarm of the Blackbird; this appears to be a true alarm-note. I might add that the Redwing sings regularly and frequently during its stay in England. I hear the song often, for it is a conspicuous sound of fine days in autumn and spring (cf. 'Lancashire Naturalist,' ii. pp. 39-41).

During the night the "seep" alone is used. In the fields there is no part of the twenty-four hours when we may not hear the call, but in places where the Redwing is never seen, as in the heart of London and other large towns, or over wide peat-moors or over the sea, the sound is confined to the hours of darkness. It is most frequently heard on fine still dark nights, but I have remarked it in bright moonlight, fog, drizzling and heavy rain, snow, and hard frost. We do not often hear it in boisterous weather, and perhaps the Redwing does not fly on such nights.

Three years ago Mr. H. B. Booth described ('Naturalist,' 1908, pp. 17-18; and also 1909, p. 78) an "Extraordinary Immigration of Redwings" in Yorkshire. The note is both valuable and interesting, but if I read the facts aright the movement should not be termed *extraordinary*, for it is a normal phenomenon, and one that we have been observing for many years in Lancashire (cf. 'Report Oldham Micros. Soc. and Field Club,' 1903-4, p. 25). Mr. Booth does not give his reasons for believing the movement to be migratory. (I trust the reader will



not view this as a mere quibble of criticism on my part; really it is a necessary discussion of the subject.) The birds are also described as being in one continuous flock, and here again there is a strong probability that a mistake has been made. When we hear a succession of separate calls we are more likely to attribute them to a passing flock than to a single bird flying around one's head. For instance, on the night of Nov. 4th, 1909, in the heart of London, I heard the call repeated hundreds of times. At 10, when I noticed the first one, the sky was cloudy, with little or no wind; at 11.15 a slight rift appeared in the south-east, and by 12.30 the sky was entirely clear. There was three-quarters of a moon, rising about 8.30. From 10.15 to midnight there was a constant succession of calls, sometimes with five-seconds intervals, occasionally a minute or even more apart. The birds were evidently low down, and some were certainly within fifty feet of my ears, and it was very strange to stand in what is perhaps the busiest street in England and listen to the mysterious birds piping above the heads of the oblivious crowd below. Yet it was not easy to imagine that big flocks were passing, for the cries were always separate, and I did not hear one except after an interval of some seconds. When a flock of birds passes us in daylight, or even by night (Terns or Curlews on migration, for instance), their voices come in bursts or gusts; but, although I have heard the nocturnal call of the Redwing thousands of times, I cannot recollect a single occasion on which the birds were calling in unison.

My personal observations on the Redwing by night have been made in many parts of Great Britain, from Fifeshire to Kent, and from Norfolk to Anglesea, and my knowledge has been enriched by the notes contributed by many of my friends. Perhaps there are parts of the country where the bird is never known, and a knowledge of these localities might be useful. I have heard them constantly over the largest towns: one cannot stand for long in a quiet London street after dark on a close October or November night without hearing the ear-piercing note. We cannot be sure that lights attract them, for I have frequently noticed the voice of the bird over miles-wide Pennine moorlands or bare Welsh hills far from any house. This has been my experience when I have walked out over a wide stretch

of sand at low tide, or when standing at the extremity of a long pier or breakwater, or on a headland jutting into the sea.

Of course, I have often been out on a favourable night and never heard the note, or perhaps paid no attention to it, for the most fascinating of subjects is stale at times. Very often the footfall must drown the sound, for it is of but the briefest duration; yet, nevertheless, I rarely go to the trouble of standing to hear the call without being rewarded, for certain nights never fail to suggest the passing of the Redwings. In this connection the following quotation from Dr. Buckland ("Curiosities of Natural History," ser. ii. 285-6, *cf.* Henderson, 'Folk-lore of the Northern Counties,' p. 99) is worth notice:—

"A rushing rustling sound is heard in the English Channel on the still dark nights of winter, and is called the Herring Spear, or Herring Piece, by the fishermen of Dover. It is caused by the flight of . . . Redwings as they cross the Channel to warm regions. The fishermen listen to the sound with awe, yet regard it as an omen of good success with their nets." The passage is not the most lucid, and a fresh investigation of the superstition would be welcome; yet it is easy to understand how the presence of Herrings near the surface of the sea on a fine night would be associated with the passing Redwings in the minds of the fishermen.

Considering the maze of telegraph- and telephone-wires above our towns, we might expect to have great numbers of "wired" Redwings; yet I cannot remember seeing even one, although I have handled a good many Song-Thrushes that have been killed in this manner. It is curious to find Mr. Barrington (in his great work on Migration in Ireland) recording a striking preponderance of Song-Thrushes over Redwings at the Irish lighthouses (from 1881 to 1899 he received one hundred and eighteen against sixty-one, but in some years—1891, for example—the proportions were eighteen and three); perhaps the Redwing has specially keen senses that enable it to steer its course with little danger in the dark of the night, or the disparity in numbers may be due to the Song-Thrush being the more abundant bird in Ireland.

For a migrant the Redwing is strangely averse to leaving its favourite fields. Thrushes and Fieldfares soon desert a district

when continual frosts or snow make the task of securing food a matter of difficulty, but most of us know that the Redwing will remain until it succumbs of starvation. We must, therefore, view it as a very sedentary bird, and not as a gipsy migrant continually wandering about the country. This is the point on which the student will make his most interesting and also his most puzzling observations.

Speaking in a general way, we rarely indeed notice the voices of any other Passerine birds after nightfall, and there is no doubt that in many parts of England the calls of the Redwing outnumber those of all other birds together. The Redwing alone amongst its kindred passes the nights in mysterious wanderings. The habit is not well known to the present-day ornithologist, but I think it was more familiar in England in olden times, and that it has some connection with the name "Swinepipe" still used for the Redwing in various parts of England. This word has, or had, many variants, some of which are "Windpipe," "Winnard," "Windle," "Wheenerd," "Wingthrush," and "Windthrush" (cf. Swainson, ' Provincial Names'; Newton, 'Dictionary of Birds,' &c.). Dr. Charleton told Willughby (bk. ii. p. 189) that they were called "Wind Thrushes" because "about the beginning of winter, when strong winds blow, by which perchance they are assisted in their passage, they come to us from the sea." But Willughby thought the name might be from the German "Wyn Trostel" [the equivalent to the modern *Weindrossel*], "or Vineyard Thrush, because . . . they feed upon grapes, . . . so that by mistake they are called Wind Thrushes, their true name being Wine Thrushes." It rather appears to me that all these old English names are more likely to have the root "Whine Thrush," but the change must have taken place long ago, for in 1548, in Cooper's 'Thesaurum Linguae,' it is "Wing Thrush." Newton derives the word "Swinepipe" from the "pipe used by swineherds," which resembled the shrill voice of the bird, but there is no evidence to support it; and it must be remarked that Slaney appears to connect the word with the "chup" note. The connection between the German name and the vine seems to be not proven.

I hope that this brief introductory note will succeed in attracting more attention to the Redwing, for it is really one of

the most mysterious of our birds. There is no doubt that it passes a large proportion of the hours of darkness on the wing, but for my part I can see no evidence strong enough to enable us to look upon *all* these movements as migratory. And even if we are ever able to prove that the calling birds are on migration, we are faced with another problem in our knowledge that the other Passerine birds do *not* migrate in this way.

Up to now I can only imagine two possible explanations, other than the unsatisfactory one of migration. The first is that the note is not confined to the Redwing, but is the common property of many other Passerine birds when on migration. I wish only to mention this, and do not hold the view.

The remaining suggestion is that these noisy journeys constitute a form of song. We have already in the Waterhen a bird whose only "song" consists of wild flights high in the dark air above town and country, but so far as I know this song-period is confined to spring and summer, and I have never observed it before the first week in March or after the first week in July. In January and February, when food is scarce, the nocturnal calls of the Redwing are rarely heard, but in the fine weather of autumn and spring, when the birds are singing by day in the tree-tops, we expect to hear their notes by night. I have elsewhere ('British Birds,' iii. pp. 155-56) expressed my opinion that bird song has no direct connection with sexual affairs, and shown why it must be regarded as nothing but the ebullition of superabundant energy; and there would be nothing unexpected in the discovery that the male Redwing lets off his superfluous vitality by wandering about in the dark skies of autumn. Probably the final solution will be based on observations made in the breeding haunts of the birds, when they are perfectly sedentary, for in this country the actual migratory movements are certain to obscure the subject. We often read that Redwings migrate in hard weather, and read also that they die of starvation at such times: it is just then that we rarely hear their nocturnal voices! And I know no better justification for my notes than the easily ascertained fact that the majority of ornithological writers have little or even no knowledge of these noctivagations of the Redwing.

## THE DISTRIBUTION OF BRITISH ANNELIDS.

BY THE REV. HILDERIC FRIEND, F.L.S., Fellow Royal Microscopical Society.

(Continued from p. 191.)

11. DEVONSHIRE.—The naturalists of this county have in past years given some attention to the Oligochaëts. Allusion is made to them in Bellamy's 'Natural History of South Devon,' and the invaluable 'Transactions' of the Devonshire Association may also be consulted. But we are not aware that anything of value has been published since the days when the study was placed on a new and scientific basis. My records are founded on personal observations, and on a series of specimens collected for me some years ago by my sister, Nurse Hetty Friend. I have previously published a brief article on Devonshire Earthworms in the 'Field Club.' The only worm recorded by Johnston ('Catalogue,' p. 61) which is indisputable is (1) *Allurus tetrædrus*, Sav., and this has been confirmed by Beddard, who received it from Bickleigh, near Plymouth. The so-called *Lumbricus minor* may include three or four different species, but I may here regard it as equivalent to (2) *L. castaneus*, Sav., which occurs under droppings in pastures. To these we may add (3) *L. terrestris*, L., and (4) *L. rubellus*, Hoffm. I have no record for the other two species of *Lumbricus* found in the British Isles. (5) *Allobophora longa*, Ude, and (6) *A. caliginosa*, Sav. (perhaps the form *turgida*, Eisen), also occur. The Brandling (7) *Eisenia fætida*, Sav., is abundant at Bovey Tracey and elsewhere. My specimens from this county are smaller and darker than those found further north—a subject of interest upon which further observations are desirable (see 'Westminster Gazette,' June 10th, 1911). (8) *Aporrectodea chlorotica*, Sav., is likewise widely distributed, as well as (9) *Eisenia rosea*, Sav. (= *mucosa*, Eisen), and (10) *Dendrobæna subrubicunda*, Eisen. In April, 1906, I received some worms from Wookey Hole, through Mr. W. Evans,

F.R.S.E., of Edinburgh, and was hoping they would prove to be an addition to our list, but they turned out to be merely a duplication of the last record. The only other record is in need of confirmation. I received from my sister two specimens of a small worm whose girdle extended from segments 31 to 36. This I have recorded as (11) *D. mammalis*, Sav. (= *D. celtica*, Rosa). Much evidently remains to be done in this delightful county. Total, 11.

12. DORSET.—Though I believe several worms are known, I have reliable records for two only. Yet it was from Dorset that I got my inspiration. The Rev. O. Pickard Cambridge gave much attention to (1) *Allurus tetrædrus*, Sav., which he found at Hyde, near Wareham, in July, 1888. Dr. Benham wrote to Cambridge for specimens, and said the species was new to Britain. This, however, was a mistake, as it was already recorded for Devonshire by Johnston (see *supra*). Benham wrote about it in 'Nature,' and Beddard in 'Proc. Roy. Phy. Soc. Edin.' x. 209. Mr. Cambridge also found a second worm in the same locality, which was said to be *Allolobophora bæckii*, but which, I think, must be provisionally entered as (2) *Dendrobæna subrubicunda*, Eisen.

13. DURHAM.—My son, J. Newton Friend, D.Sc., Ph.D., has sent me specimens of nine different kinds of earthworms from this county as follows:—Darlington, September, 1909: (1) *Allolobophora longa*, Ude; (2) *Lumbricus terrestris*, L.; (3) *L. rubellus*, Hoffm., and (4) *L. castaneus*, Sav.; (5) *A. caliginosa*, Sav. (*turgida*, Eisen); (6) *Aporrectodea chlorotica*, Sav.; (7) *Eisenia rosea*, Sav.; and (8) *Dendrobæna subrubicunda*, Eisen. In August, 1911 (9) *Eisenia fætida*, Sav., from clayey garden soil.

14. ESSEX.—I have published information on Essex Earthworms from time to time in the 'Essex Naturalist' and elsewhere. In the early nineties I had a most excellent correspondent and collector in the person of Mr. Wm. Allen, of Canning Town. Mr. Wm. Cole, F.L.S., and Mr. George Day, F.R.M.S., also assisted me in my endeavours to make the county list complete. Mr. Allen sent me from Plaistow Marsh (1) *Bimastus eiseni*, Levinsen, and an allied form, which I named var. *gracilis*, but which I am now disposed to think may have been a different species. (2) *Dendrobæna arborea*, Eisen, is

found in Epping Forest, as well as (3) *D. subrubicunda*, Eisen. Mr. Day sent me, also from Epping Forest and elsewhere, the three common species of *Lumbricus*, viz. (4) *L. terrestris*, L.; (5) *L. rubellus*, Hoffm.; and (6) *L. castaneus*, Sav. On April 6th, 1892, I received a series of worms from Epping Forest, which contained, in addition to some of the foregoing, specimens of (7) *Allolobophora longa*, Ude, and some very curious examples of (8) *A. caliginosa*, Sav. Some of these were typical *turgida*, Eisen, but one specimen was remarkable in that it had a continuous band (*tubercula pubertatis*) on one side extending over four segments, with discontinuous pores on the other side. From Plaistow Marshes Mr. Allen sent me about the same time the three species of *Lumbricus*, together with fine types of (9) *Eisenia foetida*, Sav., or the Brandling, and the Gilt-tail recorded above (3), with (10) *Aporrectodea chlorotica*, Sav., and var. *pallescens*, Friend. In May I had from the same indefatigable worker, from Rainham, in addition to Nos. 4, 6, 8, 10, the Square-tail (11) *Allurus tetraedrus*, Sav. Further consignments confirmed many of the foregoing, and added (12) *A. caliginosa*, form *trapezoides*, and a species of *Dendrobæna* which I was not able to identify. I fear the specimens are now lost, but, as the Essex gleanings were rich in curious forms, possibly it was a rare or unknown species. Oerley, a Hungarian authority, who worked for a time in England, examined the worms around Woolwich, and recorded one or two (notably *Octolasmium rubidum*, Oerley), which have not been found again either here or elsewhere. Having had large numbers of types from the same localities, I do not record Oerley's species, as I think they would have been met with again had his records been correct. A species received from the Old Forest through Mr. Day in June, 1902, resembled No. 3 in certain particulars, but may have been a different form. (13) *Eisenia rosea*, Sav. (= *Allolobophora mucosa*, Eisen) reached me from various localities, and (14) *Octolasmium lacteum*, Oerley, came from Mr. Allen's garden in Canning Town, as well as from Epping Forest (recorded as *Allolobophora profuga*, Rosa). Total, 14.

15. GLOUCESTERSHIRE.—While Mr. Allen and others were working so assiduously in Essex, Mr. Watkins, of Painswick, was emulating them in his efforts to make the list for this

county as complete as possible. The three species of *Lumbricus* were early in the field: (1) *L. terrestris*, L.; (2) *L. rubellus*, Hoffm.; and (3) *L. castaneus*, Sav.; also (4) *Allolobophora longa*, Ude; (5) *Dendrobæna subrubicunda*, Eisen; (6) *Aporrectodea chlorotica*, Sav., and (7) *Bimastus eiseni*, Levinsen; (8) *Dendrobæna mammalis*, Sav. (= *A. celtica*, Rosa) was in good form. I received the same worm also from Avonmouth through my friend Mr. Huddart, who also added (May 24th, 1892) two new species to the list. The first (9) *Lumbricus festivus*, Sav. (= *L. rubescens*, Friend), had never before been received from any correspondent, all the specimens I had seen having been collected by myself. The second was (10) *Octolasmium lacteum*, Oerley (= *A. profuga*, Rosa). The two forms of *caliginosa* (11) *Allolobophora turgida*, Eisen, and (12) *A. trapezoides*, Dugès, also occur, and (13) *Eisenia rosea*, Sav. The list closes with (14) *Allurus tetrædrus*, Sav. Total, 14.

16. HAMPSHIRE.—This county, rendered famous by White's 'Natural History,' is still sadly neglected so far as the earth-worms are concerned. We have so far not a single trustworthy record.

17. HEREFORD.—During the past three years I have been able personally to work a portion of this county with good results. My visits have chiefly been to the district between Malvern and Ledbury, including Colwall, Bosbury, and Eastnor. The four species of *Lumbricus* all occur, viz. (1) *L. terrestris*, L.; (2) *L. festivus*, Sav. (= *L. rubescens*, Friend); (3) *L. rubellus*, Hoffm.; and (4) *L. castaneus*, Sav.; also (5) *Allolobophora longa*, Ude, and (6) *A. caliginosa* forma *turgida*, Eisen, as well as (7) forma *trapezoides*, Dugès. (8) *Octolasmium lacteum*, Oerley (= *A. profuga*, Rosa), is of frequent occurrence in the gardens, as well as its related form (9) *O. cyaneum*, Sav. (= *Allolobophora studiosa*, Rosa). The Brandling (10) *Eisenia fætida*, Sav., and (11) *E. rosea*, Sav., are very plentiful. (12) *Aporrectodea chlorotica*, Sav., occurs everywhere, and the watercourses can hardly be searched in vain for (13) *Allurus tetrædrus*, Sav. (14) *Dendrobæna subrubicunda*, Eisen, and its small ally, the true Treeworm (15) *D. arborea*, Eisen, may be found in dead stumps and old leaf-mould. (16) *Bimastus eiseni*, Levinsen, occurs in the same situations at West Malvern. Two other worms remain to be mentioned. I found

(17) *Helodrilus oculatus*, Hoffm., last Easter in a ditch near Eastnor—an interesting record; while (18) *Eisenia veneta*, Rosa (= *Allolobophora hibernica*, Friend), has at West Malvern yielded two very sharply defined varieties, which I have named respectively *robusta* and *dendroidea* (see 'Gardeners' Chronicle,' October 9th, 1909). The county record stands at total 18.

18. HERTFORDSHIRE.—I am chiefly indebted to the Rev. Theodore Wood for my knowledge of the Annelids of this county, and published an account of eight species so long ago as December, 1891, in the 'Field Club.' They were collected at Baldock, and in the following year the list rose to a total of fifteen species, as follows: (1) *Lumbricus terrestris*, L.; (2) *L. rubellus*, Hoffm.; (3) *L. castaneus*, Sav. (= *purpureus*, Eisen); (4) *Allolobophora longa*, Ude; (5) *A. turgida*, Eisen; (6) *A. trapezoides*, Dugès (these two being forms of *A. caliginosa*, Sav.); (7) *Octolasmium lacteum*, Oerley (= *A. profuga*, Rosa); (8) *Bimastus eiseni*, Lev.; (9) *Eisenia foetida*, Sav., or the Brandling, and (10) *E. rosea*, Sav. (= *A. mucosa*, Eisen); (11) *Aporrectodea chlorotica*, Sav., and (12) *A. cambrica*, Friend; (13) *Dendrobæna subrubicunda*, Eisen, and (14) *D. arborea*, Eisen; with (15) *Allurus tetrædrus*, Sav. One of the specimens of *Allurus* had the male pores on the twelfth instead of the thirteenth segment.

19. HUNTINGDONSHIRE.—Nothing known.

20. ISLE OF MAN.—We owe our knowledge of the Manx Annelids to Mr. Southern, B.Sc., and those interested in the subject should consult his "Contributions towards a Monograph of the British and Irish Oligochæta" in Proc. Royal Irish Acad. xxvii., Section B, No. 8 (1909). In addition to several Enchytræids, which will be recorded later, we find: (1) *Lumbricus rubellus*, Hoffm.; (2) *L. castaneus*, Sav.; (3) *Allurus* (= *Eiseniella*) *tetrædrus*, Sav.; (4) *Aporrectodea* (*Allolobophora*) *chlorotica*, Sav.; (5) *Dendrobæna subrubicunda*, Eisen; (6) *D. arborea*, Eisen; (7) *Bimastus eiseni*, Lev.; (8) *B. constrictus*, Rosa; and (9) *Octolasmium lacteum*, Oerley (= *A. profuga*, Rosa).

21. ISLE OF WIGHT.—No records to hand.

22. KENT.—I wrote on the Earthworms of Kent some years ago in the 'Field Club,' recording six species received from "Abbey Wood, Kent, in light sandy soil," through the kindness of the editor, Rev. Theodore Wood. I give the corrected list in

the order in which I then described them : (1) *Eisenia fætida*, Sav., or the Brandling, and its ally, the Gilt-tail ; (2) *Dendrobæna subrubicunda*, Eisen ; (3) *Allolobophora turgida*, Eisen ; (4) *Allurus tetrædrus*, Sav. ; (5) *Lumbricus rubellus*, Hoffm. ; and (6) *L. castaneus*, Sav. Though Darwin lived and worked in Kent, he does not help us to a knowledge of the species of worms found there. I was at Tunbridge Wells, March 26th, 1892, and found (7) *Lumbricus terrestris*, L., and (8) *L. festivus*, Sav., with the other two species of *Lumbricus* ; also (9) *Allolobophora longa*, Ude, and (10) *Dendrobæna mammalis*, Sav. In July of the same year Mr. Wood sent me from Thanet several of the foregoing, besides (11) *Aporrectodea chlorotica*, Sav. ; (12) *Octolasmus cyaneum*, Oerley (= *A. studiosa*, Rosa) ; and (13) *Eisenia rosea*, Sav. (= *A. mucosa*, Eisen). I regret that during my residence in Sheppey and my visits to the South of England I rarely had opportunities for more extended researches, or the number would certainly exceed the present total, 13.

23. KEW GARDENS.—Naturally we find many Annelids in Kew Gardens which are not indigenous. I omit from this list all foreign genera, and retain only those species which are either known to be British by the fact that they are found elsewhere within our area, or are so nearly allied to known species that there is a possibility of their being natives. It is many years since I first visited Kew for the purposes of this study, and I have had every assistance from the officials and gardeners down till the present time. The Kew 'Bulletins' and Beddard's 'Monograph' should be consulted by those who wish for fuller information. In March, 1897, I received from the late Mr. G. Nicholson (1) *Lumbricus terrestris*, L. ; (2) *L. rubellus*, Hoffm. ; and a variety of (3) *Aporrectodea chlorotica*, Sav. ; besides Branchiura and other forms. Mr. S. T. Dunn, B.A., also sent me somewhat later some interesting species, which will be recorded under another head. The systematic study of the Annelids, however, may be said to have been begun in 1909, and it is still progressing. During this time we have added (4) *Allolobophora turgida*, Eisen, and (5) *A. trapezoides*, Dugès. These two forms are sometimes very distinct at Kew. (6) *Eisenia fætida*, Sav., is very variable, probably because specimens are often introduced from other parts of the world. (7)

*Dendrobæna subrubicunda*, Eisen, and (8) *D. arborea*, Eisen, are frequent. Here I place also (9) *D. submontana*, Vej., concerning which I wrote fully in the 'Gardeners' Chronicle,' January 29th, 1910. A new species of *Aporrectodea* was also found in 1910—(10) *A. similis*, Friend—and I see no reason why it should not be frequently met with elsewhere. The type and varieties of (11) *Eisenia veneta*, Rosa, have often occurred; also (12) *E. rosea*, Sav. (= *Allolobophora mucosa*, Eisen); (13) *Lumbricus castaneus*, Sav.; and (14) *Octolasmus cyaneum*, Oerley (= *Allolobophora studiosa*, Rosa); and in September, 1909, I found (15) *Dendrobæna octædra*, Sav. (= *bæckii*, Eisen), which is one of our rarest worms; also (16) *Allolobophora longa*, Ude, and (17) *Bimastus constrictus*, Rosa. Some well-known species will yet be found, without doubt, when the survey is complete. Total, 17.

24. LANCASHIRE.—It is twenty years since I began my personal researches here. On June 5th, 1891, I recorded from the neighbourhood of Colne (1) *Lumbricus rubellus*, Hoffm.; (2) *L. castaneus*, Sav.; (3) *L. terrestris*, L.; (4) *Allolobophora trapezoides*, Dugès; (5) *Dendrobæna subrubicunda*, Eisen; (6) *Eisenia rosea*, Sav.; (7) *Aporrectodea chlorotica*, Sav.; and (8) *Allurus tetrædrus*, Sav. On Easter Monday, April 18th, 1892, I was at Morecambe, and found all the foregoing, together with (9) *Dendrobæna mammalis*, Sav. (= *Allolobophora celtica*, Rosa), and (10) *Allolobophora turgida*, Eisen. Meanwhile, I had received from Mr. Nuttall, of Rochdale (September 26th, 1891), (11) *A. longa*, Ude, and Nos. 1, 3, 6, as given above. In 1899 I found some of the foregoing at Stockport, and added a new Enchytraeid. My later visits have been occupied chiefly with the estuarine forms and Enchytraeids, which will be dealt with later. Mr. Southern has recently added two or three interesting species to this list. He records in the 'Contributions' (see Bibliography, p. 184), Nos. 1, 3, 5, 6, 7, 8, 10, 11, and adds (12) *Dendrobæna arborea*, Eisen (= *rubidus*, Sav.); (13) *Eisenia fætida*, Sav.; and *Octolasmus cyaneum*, Oerley. The phosphorescent worm referred to by Johnston ('Catalogue,' p. 62) remains in doubt. Total, 13.

25. LEICESTERSHIRE.—In June, 1892, I received from Mr. Elliott, of Belgrave, Leicester, two batches of earthworms. They were all of the ordinary species, numbering eight, as follows:

Three species of *Lumbricus*—(1) *L. terrestris*, L.; (2) *L. rubellus*, Hoffm., and (3) *L. castaneus*, Sav.; (4) *Allolobophora longa*, Ude; (5) *Eisenia foetida*, Sav., and (6) *E. rosea*, Sav.; (7) *Aporrectodea chlorotica*, Sav.; and (8) *Dendrobæna subrubicunda*, Eisen. I have so far been able to add only one species to list, *viz.* (9) *Allurus tetrædrus*, Sav., near Ashby.

26. LINCOLNSHIRE.—Though there are many able naturalists in this county, and much good work has been done in other directions, our knowledge of the Annelids is terribly in arrears. Unless I have mislaid my records, there are at present only two species which have been duly authenticated. In April, 1893, I received from Mablethorpe, through Mr. Walter F. Baker, of Leeds, (1) *Lumbricus rubellus*, Hoffm., and (2) *L. castaneus*, Sav.

(To be continued.)

THE BIRDS OF THAT PORTION OF THE NORTH-EAST COAST BETWEEN TYNEMOUTH AND SEATON SLUICE, NORTHUMBERLAND.

BY J. M. CHARLTON.

(Continued from p. 313.)

BARN-OWL (*Strix flammea*).—In January, 1911, two of these birds were shot at Delaval Hall by Mr. Dixon, of Seaton. They had not been previously observed there, so very possibly were on migration. I have every reason to think that they would have remained and bred there, as others have probably done before.

LONG-EARED OWL (*Asio otus*).—A fairly regular autumn visitant. All the occurrences I know of were in the vicinity of Holywell Dene, among the trees there. This species makes straight for woods on its arrival.

SHORT-EARED OWL (*A. accipitrinus*).—A regular winter visitant; numbers have been shot on the coast. Unlike the preceding species, it has not such a strict partiality for trees, but after its arrival is found along the sand-banks and fields near the shore. As many as ten have been flushed in a flock at once.

TAWNY OWL (*Syrnium aluco*).—In autumn a few arrive on the coast and pass inland, and return in spring to depart for the Continent. They have been shot on the rocks by St. Mary's Island. On May 4th, 1904, when in company with A. King, Esq., I observed one of these birds at Briar-Dene, which flew in the direction of Whitley, mobbed by Rooks and small birds. On our return to Cullercoats, the first object which caught our eye, passing St. George's Church, was a Tawny Owl, evidently the same bird, sitting-beneath a small arch in the steeple, and surrounded by twittering Sparrows.

[MARSH-HARRIER (*Circus aeruginosus*).]—A bird of this species was stuffed, very badly, and placed in the windows of a shop at Tynemouth, where it was for many years. On making enquiries, I learnt that it had been shot off Tynemouth in about 1820.

As I have my doubts as to this, I have made but a passing mention of it.

COMMON BUZZARD (*Buteo vulgaris*).—A rare visitant. Two birds were observed by several people in Holywell Dene early in May, 1904, and one of them was shot. A male of the dark form was shot in Holywell Dene in December, 1907, by Mr. Richardson. It is now in my possession.

ROUGH-LEGGED BUZZARD (*B. lagopus*).—This species has only once occurred within the district. A very fine specimen (immature male) was shot on Nov. 15th, 1910, by R. Dixon, of Seaton Delaval. He had observed it for a fortnight flying about among the trees near Delaval Hall. Several local gunners were, of course, out after it. He could always tell where it was by the commotion caused among the Rooks. When shot it was flying from a large beech-tree, among others, forming a small copse near the Hall. It is a very fine darkly-marked bird ('British Birds,' December, 1910).

WHITE-TAILED EAGLE (*Haliaëtus albicilla*).—A very rare winter visitant; the first example procured here was shot about 1874 by a Mr. John Armstrong off the rocks near the point to the north of Cullercoats Bay. This specimen was only "winged," and was kept in confinement at the 'Huddleston Arms Hotel' at Cullercoats for some weeks. A second example was shot in Holywell Dene on Nov. 25th, 1908. The latter was at first thought to be a Golden Eagle, as is often the case, and was inserted in the local papers as such, but when sent to be stuffed it was identified as a Sea-Eagle. Mr. Siddle, of Holywell, who shot it, tells me that on the first occasion that he had ever handled a gun he walked into the Dene, and was told that there was an Eagle there. Going on, he came upon two men, and saw them creeping up to a gate on which sat the bird itself. At about thirty yards' range steady aim was taken by one—"bang!" The Eagle launched itself into the air. Another report, then two more in quick succession, and still the bird flew on! It flew some distance towards Mr. Siddle, and settled in a tree close by him. He fired, and it fell to earth with a dull thud. It was set up by R. Duncan, who informs me that it had numbers of shot in it, which had evidently been in several days, and had caused festering wounds. It was a very large

specimen, an immature female in the fourth year, three inches above the average length. Its measurements were: Length, 39 in.; extent of wings, 92 in.; weight, 11 lb. It would be halting on migration south, very probably having been shot at and wounded on its passage. The confusion in its identity arose from the fact that it had not assumed the white tail.

SPARROW-HAWK (*Accipiter nisus*).—A rare visitant on migration in autumn. The only records are: an immature female, shot at St. Mary's Island in January, 1892, by Herbert Coxon, Esq., and now in his collection; another, shot at Cullercoats about Jan. 10th, 1911; one which passed through Mr. Richardson's hands in 1907; another, shot at Cullercoats in December, 1910; and on April 9th, 1911, my brother and myself observed one from our house, flying north against a heavy wind, and evidently on migration. It flew close above the cliffs at Cullercoats.

HONEY-BUZZARD (*Pernis apivorus*).—In his catalogue of the 'Birds of Northumberland and Durham,' John Hancock mentions a mature bird that was picked up, drowned, on Whitley Sands on Aug. 27th, 1835, when he was on the beach.

PEREGRINE FALCON (*Falco peregrinus*).—A very rare autumn visitant. A female in the first plumage was shot at Hartley Bates on Sept. 22nd, 1852, and is now in the Hancock Museum. In his 'Scraps about Birds,' C. M. Adamson says:—"On the 8th October, 1858, I saw a young Peregrine Falcon which a fisherman at Cullercoats had shot early in the morning whilst feeding on a Woodcock, which it had probably caught before having actually alighted." Another specimen was shot by Mr. Ewen on St. Mary's Island on Oct. 1st, 1889; it had the whole leg of a Partridge in its crop. It is in Mr. Ewen's possession, and was stuffed by Mr. R. Duncan, being one of the best examples of his skill.

HOBBY (*F. subbuteo*).—The only record of this species is that of an adult female, shot at Cullercoats on June 2nd, 1863, and mentioned by J. Hancock in his catalogue, who states that it was at the time of his writing in the possession of Mr. M. C. Woods, of Holleyn Hall. This bird was on passage from the south.

MERLIN (*F. aestivalis*).—An occasional visitant in autumn and winter. The first record I have is of a female shot at St. Mary's

Island by J. Duncan on Nov. 16th, 1892, which is now in the collection of H. Coxon, Esq. In 1904 two specimens (immature) were shot, now in Mr. Richardson's possession.

**KESTREL** (*F. tinnunculus*).—A not uncommon visitor to the fields in autumn and winter when on migration; numbers appear to arrive on the coast in autumn. Nearly all the occurrences are of immature and female birds, adult males being very rare.

**OSPREY** (*Pandion haliaetus*).—A rare visitant on migration. Selby mentions one shot near Hartley, which must have been a few years prior to 1831. I am indebted to Mr. R. Duncan for the following trustworthy and interesting information concerning this species:—"The first specimen I saw obtained was one shot by a pitman of Hartley. It was feeding on the carcase of a horse which lay in the passage between the island and the mainland. This was about the year 1850. The second was seen by myself at Tynemouth about 1860, where it was afterwards shot. A third specimen was shot at Hartley about 1872. A fourth was seen on the flagstaff at the rifle-range near St. Mary's Island. A pitman fired three shots at it, missing it completely; but the bird was so exhausted that it could not stir from its perch. Eventually it was shot when the man approached within closer range. This would be about 1876. The last bird was one which, although it had several shots fired at it, escaped out to sea, flying close to the water with heavy wing beats. This was in 1881. As far as I can remember, all the above birds were seen or procured in September." The last was procured in the year in which the remarkable number of ten specimens were recorded on the east coast of England.

**CORMORANT** (*Phalacrocorax carbo*).—Occasionally passes along the coast; it is observed going north in spring and south in winter in small flocks. "Gormer" or "Gourmet" are the local names for the Cormorant. On several occasions during the winter of 1910 a Cormorant took its stand on the Black Midden Rocks at the mouth of the Tyne, and remained sitting within thirty yards of the shore on a half-submerged rock. The children assembled once and pelted it with stones, but the only notice it took of the missiles was to occasionally move its head out of the line of flight of one if it came too near. On Dec. 14th,

1910, I observed one of the white-breasted variety of the Cormorant off St. Mary's Island. I was shooting from a coble, and the bird rose up from the water facing the wind, and with its breast to me, the whole of which, together with the belly, appeared dull white. This form is described in the 'Field' for Nov. 6th, 1909, and also in 'British Birds.' The bird I saw had not any white on the throat or neck. William Turner, in his Commentary on the Birds of Pliny and Aristotle (1544), says: ".... I have seen Mergi [Cormorants] nesting on sea cliffs about the mouth of the Tyne river...." Some of the cliffs here referred to are doubtless those of Tynemouth. While touching on the subject it would perhaps not be inappropriate to give a short sketch of the geological features of the district. These have for many years been a source of trouble to geologists. The strata of the rocks along the coast have been so broken up that in some cases it is difficult to define them. This peculiar action is believed to be due to a great thrust from the north, which has probably originated in the elevation of the Cheviot range in a former geological age. The coast-line is composed for the most part of coal-measure rocks, but there are blocks of magnesium limestone (Permian) let into the cliffs by faults at three points, *viz.* Tynemouth (Cullercoats), Whitley, and Seaton Sluice. The outcrop of this limestone at Tynemouth is very large, and forms the whole of the cliff on which the castle stands; that at Whitley and Cullercoats is also of considerable size. A large quantity of limestone occurs at Whitley Dene, and it was formerly quarried, thereby forming the depression for the reservoir. The lime was extracted in kilns, which still remain, and form ample nesting-sites for Sparrows and Starlings. Marl slate is in evidence at Cullercoats, forming the base of the magnesium limestone, and seams of pulverized coal occur along the face of the cliffs on the south of George's Point, and also on the cliffs near St. Mary's Island. This latter is sometimes broken off and strewn in large quantities on the foreshore by the waves. There is an outcrop of yellow sandstone at the extremity of George's Point, Cullercoats, and again at the base of Cullercoats Bay, several large caves having been bored in it by the action of the tide. These sandstone cliffs have been proved by the nature of the particles of sand to be of

desert formation, and they are much favoured by flocks of domestic Pigeons as well as Sparrows, which obtain the grit from them. Quantities of shale occur just here.

**SHAG** (*P. graculus*).—An uncommon winter visitant. I have very few records, and all of immature specimens: one shot off the beacon point in front of our house at Cullercoats on Jan. 17th, 1904; two in the possession of Mr. Elliott, Whitley Bay, shot at Whitley, 1905; one shot by myself from a coble on Dec. 14th, 1910; and in January, 1911, I several times observed a bird of this species swimming about and diving in Cullercoats Bay. At a distance it was distinguishable from a Diver by the apparently greater effort it made in diving.

**GANNET** (*Sula bassana*).—Formerly not uncommon, when, my father informs me, several were often to be seen in summer fishing off the North Pier, Tynemouth, being visitors from the Bass Rock. Now the Gannet is but seldom seen. Mr. R. Duncan informs me that one day many years ago, while passing along at the island, he came upon one of these birds on the sand. It was entirely unable to rise, and on his approach disgorged a large quantity of fish, evidently partly in fear and partly to lighten itself so as to escape.

**COMMON HERON** (*Ardea cinerea*).—An occasional visitor in winter. One or more are observed on the coast every year. On Aug. 3rd, 1903, I observed a Heron come directly over the sea from the east, and on reaching the coast turn due south and pass out of sight. Occasionally a bird of this species visits the dis-used reservoir at Whitley, and remains a few days.

**BITTERN** (*Botaurus stellaris*).—A bird of this species was caught alive in a public lavatory at Cullercoats in February, 1905. This was the time that as many as six specimens occurred in the north of England, but this bird was not then recorded. Mr. Joseph Taylor, who caught the bird, kept it for several days, but it pined away and died. It was examined at the Hancock Museum, and set up by Mr. Taylor, who gave it to a Mr. Watson, of Wallsend. When in confinement Mr. Taylor informs me that it attacked him fiercely with its beak, and was handled with a considerable amount of danger.

(To be continued.)

## L'AGE DES PERDRIX.

## I.—LA PERDRIX GRISE.

PAR LE DR. LOUIS BUREAU.

(Directeur du Muséum d'Histoire Naturelle de Nantes.)

LES phénomènes de la mue, qui jouent un si grand rôle dans la biologie des oiseaux, ont attiré spécialement mon attention. Déjà, mon ami M. Harting a présenté aux lecteur du 'Zoologist' une analyse de mon mémoire : 'De la mue du bec du Macareux arctique (*Fratercula arctica*) après la saison des amours.'

C'est encore l'étude de la mue des oiseaux qui m'a fourni les éléments d'un récent mémoire intitulé 'L'âge des Perdrix,'\* qui est de nature à intéresser les ornithologistes et les chasseurs.

A la suite d'observations générales sur la mue, je suis arrivé à constater qu'il était parfois possible de déterminer, avec une étonnante précision, l'âge d'un oiseau tué à l'état sauvage. Et, parmi la gent emplumée, ce sont les Perdrix qui donnent les résultats les plus intéressants, les plus utiles, et les plus faciles à vérifier.

La Perdrix grise, surtout, se présente dans des conditions très favorables à l'étude.

La détermination de l'âge d'un Perdreau est basée sur la mue qui, débutant avant la fin du premier mois, se continue jusqu'à l'âge de quatre mois, généralement jusqu'à mi ou fin octobre, novembre pour les compagnies arriérées.

Après cette époque, jusqu'à octobre de l'année suivante, on peut encore reconnaître si une Perdrix est née au dernier printemps ou âgée de plus d'un an.

Cette étude de l'âge des Perdreaux offre non seulement un intérêt biologique, mais aussi un intérêt d'applications pratiques, surtout sur un terrain de chasse où on ne fait pas d'élevage.

Le chasseur possédant des notions précises sur le développement des Perdreaux se trouve, sur un terrain de chasse, dans la situation d'un voyageur qui, descendant pour la première fois dans une petite localité, se ferait fort de déterminer l'âge de la plupart des habitants et de reconstituer les familles.

Pendant les premiers mois de la chasse—fin d'août, septembre, octobre et parfois commencement de novembre—un Perdreau d'origine sauvage peut être daté avec précision.

\* LOUIS BUREAU: 'L'âge des Perdrix.'—I. La Perdrix grise. In 8°, 124 pp., 35 figures. Nantes: Vié libraire, 28, Passage Pommeraye.—Williams & Norgate, 14, Henrietta Street, Covent Garden, London, W.C.

Tout chasseur peut se convaincre de la régularité avec laquelle se fait la mue d'un Perdreau :

Tuez un Perdreau gris pendant les mois que je viens de citer. Examinez ses ailes, surtout les 10 rémiges primaires, vous constaterez qu'elles sont dans le même état de développement : si l'une de ces rémiges vient de tomber à l'aile droite, vous verrez qu'il en est ainsi de celle qui lui correspond à l'aile gauche.

Si une des rémiges de remplacement, c'est-à-dire de deuxième plumage, a atteint, à l'aile droite, une longueur déterminée, même développement sera constaté à l'aile gauche.

La régularité de la mue des rémiges primaires apparaît ainsi nettement et des observations répétées ne font que la confirmer.

Tuez, à un départ, plusieurs Perdreaux d'une même compagnie, comparez leurs ailes, comme vous venez de le faire pour le précédent, vous constaterez une identité presque complète.

Voilà une constatation que tout chasseur peut faire chaque fois qu'il abat un ou deux Perdreaux. Elle est bien de nature à attirer l'attention.

Maintenant, comment se fait cette mue des rémiges primaires ?

Elle se fait suivant un ordre régulier, qui est toujours le même :

Numérotez les rémiges primaires, en allant de l'extrémité de l'aile vers le corps de l'oiseau :

1, 2, 3, 4, 5, 6, 7, 8, 9, et 10.

La 10<sup>e</sup> rémige primaire du premier plumage tombera la première, avant la fin du premier mois, et, lorsque la plume de remplacement (deuxième plumage) aura atteint, en moyenne, 15 millimètres, en 3 jours, la 9<sup>e</sup> du premier plumage tombera pour être remplacée aussitôt par une nouvelle rémige.

Ensuite tombent successivement, à *des intervalles de temps de plus en plus longs*, les 8<sup>e</sup>, 7<sup>e</sup>, 6<sup>e</sup>, 5<sup>e</sup>, 4<sup>e</sup>, et 3<sup>e</sup> auxquelles succèdent immédiatement des rémiges de remplacement dont la rapidité de développement en 24 heures décroît suivant le même ordre.

Les rémiges 2 et 1 ne tombent pas à la première mue. Elles persistent jusqu'à la fin de la seconde mue, septembre ou octobre de l'année suivante, ce qui permet de reconnaître pendant quinze ou seize mois si une Perdrix est jeune ou vieille : l'extrémité de la 1<sup>re</sup> rémige est *pointue* chez le Perdreau jusqu'à l'âge de 15 ou 16 mois ; elle est *arrondie* chez la Perdrix plus âgée.

Ensuite on ne peut plus reconnaître l'âge d'une Perdrix.

De cette symétrie et de cette régularité dans la chute des rémiges primaires, à la première mue—phénomène qui n'est sujet à aucune exception—it est aisé d'entrevoir la possibilité de dresser un Tableau chronométrique de l'âge des Perdreaux.

C'est à quoi je suis arrivé, à la suite de onze années d'observations méthodiques, précédées d'années préparatoires.

Voici comment j'ai procédé :

J'ai fait quelques élevages, qui m'ont été utiles, tout en ne demandant des données certaines qu'aux Perdreaux nés et vivant en liberté.

Cependant, dans l'impossibilité où je me suis trouvé, pendant les dix premières années, de tuer des Perdreaux dont le jour de naissance, à l'état sauvage, m'était connu, j'ai dû acquérir, par l'élevage, des notions sur le développement de ces oiseaux pendant les premières semaines. J'ai fait usage des Perdreaux qui se développaient le mieux et qui, par leur maximum de développement ne paraissaient pas avoir souffert de l'élevage.

Connaissant le beau Perdreau d'élevage, il m'a été possible de prélever, à l'état sauvage, sur des compagnies de 2<sup>e</sup> et 3<sup>e</sup> couvées, un premier Perdreau que j'ai identifié avec des Perdreaux d'élevage dont j'avais conservé les dépouilles, déterminant ainsi son âge avec une précision qui ne laisse guère à désirer.

Après cela, j'ai prélevé, dans ces compagnies et dans d'autres mises en observation, des Perdreaux à des intervalles divers, qui m'ont permis de suivre les progrès de la mue, à un moment précis et pendant un temps déterminé.

Ces observations, souvent renouvelées, m'ont permis de dresser un Tableau chronométrique donnant, jour par jour, le développement *moyen* des Perdreaux, pendant toute la durée de la première mue, c'est-à-dire, pendant les mois d'août, septembre, octobre, et parfois commencement de novembre, chez les compagnies arriérées.

Au 1<sup>er</sup> novembre, 1909, ce tableau me paraissait avoir atteint toute la précision désirable. Il restait à le *mettre au point*, à l'aide d'un Perdreau d'éclosion datée, né et vivant à l'état sauvage, et de lui faire subir ensuite un *contrôle* avec des Perdreaux de différents âges également datés.

N'étant pas encore parvenu, à cette époque, à suivre une compagnie dont le jour d'éclosion avait été constaté, le *zéro*, autrement dit *le jour d'éclosion et celui de la chute de la 10<sup>e</sup> rémige primaire* ne m'étaient connus que chez des Perdreaux d'élevage.

C'est alors qu'à la date du 20 mai, 1910, dans la crainte de ne pas encore réussir à constater le jour d'éclosion de compagnies de Perdrix, à l'état sauvage, je fis paraître une *Note préliminaire sur l'âge des Perdrix*, dans laquelle j'exposai la méthode employée dans mes recherches et sollicitai le concours de propriétaires ayant des goûts cynégétiques.

Il s'agissait de découvrir la date d'éclosion d'une ou plusieurs compagnies de Perdrix et d'y prélever, à partir du 30<sup>e</sup> jour seulement, pendant les mois d'août, septembre et octobre, plusieurs individus pour les confronter au Tableau chronométrique.

Cet appel a été entendu et le contrôle a été fait avec toute la précision désirable pendant les premiers mois de la chasse de 1910.

Par un simple examen des ailes, un Perdreau nous avoue son âge, et on peut présumer s'il est en retard, normal, ou en avance dans son développement sur la moyenne atteinte par les individus de même âge. On conçoit le profit que les éleveurs peuvent tirer de cet intéressant résultat.

Si un Perdreau d'éclosion datée, confronté au Tableau, accuse deux ou trois jours de moins ou de plus qu'il n'a en réalité, ce n'est pas le Tableau qui est en défaut, c'est l'oiseau qui est en retard ou en avance dans son développement sur la moyenne atteinte par les individus de son âge.

A défaut de Perdreaux d'éclosion datée, tout chasseur peut soumettre à l'épreuve le Tableau chronométrique, à l'aide de Perdreaux tués à des intervalles de temps divers dans une même compagnie.

L'erreur à prévoir est, du reste, très limitée ; dans les cas examinés elle n'excède pas trois jours, et ces cas sont rares.

Quelque fois même l'occasion s'offre au chasseur de déterminer exactement, à distance, l'âge d'une compagnie :

“ Peut-être, avez-vous vu, parfois, au départ d'une compagnie, une plume se détacher sous l'influence des battements d'ailes précipités et tomber à terre. Le moment de la chute de cette rémige était arrivé, le départ en a été la cause déterminante.

“ Remarquez l'endroit où tombe cette plume, prenez-la en main, et, si c'est une rémige primaire, ce que vous reconnaîtrez aisément, déterminez son numéro d'ordre, à l'aide des figures ci-jointes, qui donnent l'état des rémiges primaires du premier plumage parvenues à leur complet développement, telle qu'elles sont au moment de leur chute.

“ Le Tableau chronométrique donnant l'âge auquel a lieu la chute de chaque rémige primaire vous fera connaître l'âge du Perdreau aussi exactement que si vous l'aviez en main.”

Dans le mémoire dont je viens de donner un aperçu, il ne s'agit pas seulement de l'âge des Perdrix. Toute la biologie de la Perdrix grise est décrite d'après des observations sur nature. L'accouplement, l'époque de la ponte, le nombre des œufs, l'époque de l'éclosion, le développement du Perdreau gris jusqu'au moment où il est devenu Perdrix sont l'objet de chapitres spéciaux, accompagnés de figures en similigravure et d'autres au trait donnant soit les principaux plumages, soit l'état des ailes à la chute de chaque rémige primaire, base du Tableau chronométrique.

L'étude de l'âge de la Perdrix rouge fera prochainement l'objet d'un mémoire spécial, dans lequel le développement des deux espèces sera comparé.

## NOTES AND QUERIES.

## AVES.

**White Wagtails at Co. Mayo.**—For the first time since these birds have been observed visiting Bartragh regularly every spring, a pair were seen the last week in August (by Captain Kirkwood) visiting the island on their autumn migration. It is strange how none have been observed previously, although a sharp look-out has been kept for them in autumn as in spring.—ROBERT WARREN (Ardnaree, Monks-town, Co. Cork).

**Abnormal Eggs of the Spotted Flycatcher.**—A pair of Spotted Flycatchers built a nest in half a coconut-shell in this garden, and on May 31st last had five eggs. They were all unmarked, and all misshapen, and resembled one another in the latter respect almost exactly. I took one egg, and did not expect that any of the others would be hatched. But one of them was hatched, and the young bird became nearly full-feathered, when it died in the nest. Probably a cat killed the parents, or one of them, for they disappeared. The Flycatcher has been scarce here for the last three or four years, and this season—like some other summer birds—has been perhaps rarer than ever. It is impossible to preserve birds in village gardens so long as the villagers keep an unlimited number of cats, and the law relating to cats remains as it is. These beasts—the only so-called domestic ones allowed to roam at will on land that does not belong to their (nominal) owners—seldom fed, and constantly tormented by children, seek a quite refuge in people's gardens, and then destroy a large proportion of the nests of birds which do not breed in inaccessible holes, as well as of the old birds and young ones of all species just out of the nest.—O. V. APLIN (Bloxham, Oxon).

**Starling and Bullock.**—On one of the hottest days of the past summer I was standing close to some young bullocks which were sorely tormented by flies. One of them was closely attended by a young Starling, which was busily engaged in pecking these insects off his nose and eyes. As the bullock kept his head more or less close to the ground, his nose was within easy reach of the bird's beak, but in order to get at the flies clustering thickly about his eyes the

Starling had to make repeated jumps, exerting just enough force to reach and neatly take off its prey without touching the sensitive skin surrounding those organs. This was accomplished apparently with such dexterity and precision that the animal seemed to have no objection whatever, neither flinching nor showing any other sign of annoyance or inconvenience.—G. T. ROPE (Blaxhall, Suffolk).

**Nutcracker in Bucks.**—It is probably worthy of record that on October 7th last I had a male Nutcracker (*Nucifraga caryocatactes*) brought to me in the flesh. It was killed in a horse-chestnut tree at the village of Whitechurch, about four miles from here. It was in good condition (quite fat). I fancy this is the first recorded instance of its occurrence in Bucks. It will be mounted for this museum. I may also state that on October 1st I received a young female Grouse from Dunkeld, Perthshire, which is white, with the exception of two or three dozen feathers. — EDWIN HOLLIS (The Museum, Church Street, Aylesbury).

**The Variety of the Gannet at the Bass Rock.**—Mr. J. H. Gurney's surmises and deductions with respect to this bird (*ante*, p. 348) are interesting, but nevertheless, I consider, quite wrong. I am not prepared to say what was the cause of the markings, or whether the bird has moulted out to a normal type, but I say most distinctly and emphatically that it was not a painted bird. It passes my comprehension how anyone who has carefully examined the photograph can imagine for one moment that it is. The birds on the Bass Rock marked for identification purposes were merely daubed with red oxide. The colour on this particular bird was even and delicate, and the markings symmetrical. Red oxide, no matter how worn or washed by the sea-water, never assumes the shade of colour worn by this Gannet. Atkinson and I paid a visit to the Bass Rock last August, and made a careful search for the bird; we did not see it, but we did see some with the remains of red oxide upon them, and if any further confirmation was needed to convince us that we had not made a mistake, we obtained it. Mr. Campbell admitted to us in the fullest manner that our bird was not one marked by him. We have also found two other gentlemen, fellow members of the Zoological Photo Club, Messrs. Stewart and Ferguson, who have seen the bird. Mr. Stewart writes me as follows:—"My friend Ferguson and myself were staying on the Rock last year from the 14th to the 18th July. The day we arrived we did not see the bird, but the next morning we both saw it on the West Cliff. It was standing with its mate beside a young one. The head was much browner than usual, and this colour

extended down the neck and was lost on the back, and the same shade of brown formed V-shaped markings on the back; this was most marked nearest the tail, which was, however, pure white, showing that it must have been an adult bird. The bill, I thought, was lighter in colour than normal, but the eyes and feet were to all appearances normal. On telling Campbell, he said it was one he had painted to see whether both birds took part in incubation. I was inclined to believe this, but the regular V markings and the non-patchy look about the colour made it more like a variety than a marked bird. I saw one of his marked birds the next day, and it was quite easy to tell the difference between the two. I certainly think that the bird was a distinct variety, as the painted birds soon lose their colour, and they are irregularly marked." Atkinson and I spent quite an hour watching the bird one day, both with field-glasses and otherwise. It was, however, quite near enough for us to examine all details without the glasses, so there was no possibility of mistake. I may say here that I have not been observing birds for nearly thirty years without being able to tell the difference between a painted bird and one coloured by nature. The fact therefore remains that the only four people who have seen the bird are perfectly certain that it was not a painted specimen, therefore other surmises, to my mind, are of no value against this evidence. It seems nowadays to be perfectly useless recording any occurrence rare or differing from the normal unless one is prepared to exhibit the specimen "in the flesh," and, although this course may be considered correct by "scientific" naturalists, to me, as a "field" observer pure and simple, it does not appeal. Otherwise it would have been an easy matter to have secured the bird.—R. FORTUNE (5, Grosvenor Terrace, East Parade, Harrogate).

**Former Occurrence of Black Grouse in Wyre Forest, Shropshire, and Worcestershire.**—In 'Berrow's Worcester Journal,' August 14th, 1817, appears an advertisement of property for sale, of which the following is an extract:—"Upwards 1100 acres of land, Brand Wood, Wimper Hill, Lower Longdon, Upper Longdon, Withy Bed, and Great Chamberlaine. All in the parish of Stottesdon, generally known as Vallet Woods, Bewdley Forest. Abounding with Grouse and Pheasants." From these particulars we can gather that Black Grouse were at least fairly abundant in that particular part of Wyre Forest. When I first visited this district in 1888 I found Black Game still here, but evidently in very reduced numbers to those of former times. I should think their numbers would not have exceeded

a score of birds altogether, and these verged rapidly on extinction. The last notes I have of Black Grouse being seen were a greyhen on June 10th, 1893, flushed on the Shropshire portion, and a male bird March 11th, 1894, on the Worcestershire part of the Forest, both not far distant from Dowles Brook.—J. STEELE ELLIOTT (Dowles Manor, Salop).

**Willow-Grouse in Northamptonshire.**—A Willow-Grouse was shot in the grazing country in South Northamptonshire on Sept. 1st, and was brought to me for identification in the flesh. It was in summer plumage, but was moulting into what is, I suppose, an autumn dress. From the amount of bright bay feathers about the fore parts, I think it must have been a male. It was in excellent condition. From this occurrence it is evident that some misguided person has been introducing the Willow-Grouse into this country, and thus running a risk of contaminating the blood of our own Red Grouse—the pride of every Briton who takes an interest in live things. The example in question may have wandered for a long distance, for the nearest moorlands (where alone an introduction is likely to be tried) are in Derbyshire, Staffordshire, and Shropshire. But wherever it came from, it evidently had had no difficulty in picking up a good living. At all events, it is a good thing the bird was killed, and it is to be hoped that all who have the interest of our native avifauna at heart will lose no opportunity of destroying any Willow-Grouse that they may meet with at large in this country.—O. V. APLIN (Bloxham, Oxon).

**Great Black-backed Gull nesting inland in Ireland.**—Three localities have come under my personal observation where this Gull was nesting inland. I have seen their nests on the islands of Lough Aderry and Lough Derryduff, which are situated between Ardara and Naran, in Donegal, and at least in one year on Lough Doon. On one small island of the former some three pairs had eggs at one time in 1891. This species was still there when I revisited this lough a few years ago. There also I found a pair of Herring-Gulls with eggs on the large island in Lough Kiltooris, some few miles distant.—J. STEELE ELLIOTT (Dowles Manor, Salop).

**White and other Varieties of Birds.**—A curious Jackdaw was shot at Wroxton on Dec. 16th, 1910. Both wings are bright cinnamon-brown, and the tail is slightly tinged with brown; otherwise the plumage is normal, and the sharp contrast of the blue-black of the mantle and the light brown of the wings is very striking. It is, I think, an old bird. In the same winter a very pale-coloured Green

Woodpecker was shot at Tusmore; the crown of the head is a dull crimson with no scarlet tinge, and the tail is tinged with a rusty tint. A pure white albino Jackdaw was shot at Drayton (the adjoining parish to Wroxton) on July 17th, 1911, and an albino Rook, of a dirty or smoky white, near Shennington, on June 3rd, in the same year. Both these are birds of the year, and had the irides, beak, and legs pale pinkish white. A pale-coloured Starling (moulting into autumn dress) with partly white quill-feathers was killed at Adderbury at the end of August. A neighbour of mine about the end of February last shot a cream-coloured Snipe in a furze cover at Milcomb. It was unfortunately very much knocked about, and was not preserved.—O. V. APLIN (Bloxham, Oxon).

**Notes from Yorkshire.**—On April 26th last a male Pied Flycatcher (*Muscicapa atricapilla*) visited Bingley Wood, and remained for the most part of a week. From what one knows of its habits, the spot is an ideal nesting-place, and it is not unreasonable to suppose that, if a female could have been found, it would have remained to breed. It is a somewhat singular thing that only the male of this species, except on rare occasions, visits the Aire Valley on migration in spring, while in a neighbouring valley, where the physical conditions would appear to be identical, it is a fairly common nesting species. Why this is so would be difficult to say, but it does not appear to be merely a question of food supply. The migration route of the females may be different to some extent from the males—at least, this would appear to be the case in Mid Airedale—and this fact may account, at least to some extent, for the species being so local in its habits. A few years ago I saw a Woodcock indulging in its characteristic love-flight in Bingley Woods, at a season of the year when it must have been nesting, but, although a careful search was made, the nest could not be discovered. Ever since I have kept asking the gamekeeper to look out for its nest, and this year he has informed me of an undoubted instance of its nesting in Bingley Woods, and was fortunate in bringing off its young. A Redshank has also nested within a short distance of this place for the first time this year, and brought off its young. Whilst searching for its nest three nests of the Snipe were found. Both the Woodcock and Redshank have extended their nesting range in Yorkshire within recent years. I have also to record the visit of the Lesser Whitethroat to this district—a male in May, but it did not remain to breed. It is a scarce breeding species in Upper Airedale. I have seen the Hawfinch twice this season, but not found its nest; once in this locality a few weeks ago, whilst sitting down,

one flew past within a few yards of where I was resting, and in June a pair were seen flying across a meadow into Bolton Woods, in Wharfedale. In July, whilst travelling along a highway close to this village, a Lesser Redpoll rose from a bank close to the roadside, and I naturally thought it was feeding on some kind of seed, and took no further notice, but on going a few days later I again saw the bird near the same place, and on going near the spot from which it arose I found the nest with two eggs, built in a quickset hedge not more than eighteen inches from the ground, and, although people were frequently passing to and fro, the old birds brought off their young in safety. I have never before found the nest of this species so near the ground; the next nearest the ground I once found in a hazel-bush, but it must have been a yard or more from the ground. Whilst walking out with a friend in May last, he called my attention to a nest partially built at the foot of a rose-bush which he had been poking with his walking-stick, and which I certainly thought was a Grasshopper-Warbler's, but owing to the nest having been disturbed it had been forsaken. Several nests are said to have been found this year in the Bradford district; it is, however, a rare species in Airedale. It is said to have bred near Thornton. I have not found all this season a nest containing a Cuckoo's egg, although the bird has been plentiful. Since this species must lay on an average ten or a dozen eggs in a season, one would expect to find them much more frequently than experience warrants. A friend of mine tells me that a Cuckoo's egg has been found in a Robin's nest near Halifax this season. Late in this season I visited a young plantation, and found a good many nests, chiefly Thrush's, all of which contained dead young ones. At first I attributed this to the intense heat, but on second thoughts I came to the conclusion that the cause must have been some disease, as they all appeared to be about the same age—perhaps six or seven days old. To find nest after nest containing dead young is one of the saddest sights witnessed this season. Corn-Crakes have been commoner than for a good many years, and so has the Red-start. I have never before seen so many young Redstarts in September, whilst the Wheatear has been remarkably scarce. The Black-headed Gull is founding breeding colonies near a good many of our reservoirs in Yorkshire; one I visited in April last, where there appeared above a hundred, nearly all of which remained to breed; another, which only had about four pairs three or four years ago, this season must have had over one hundred and fifty pairs breeding.

In the July number of 'The Zoologist' (*ante*, p. 277), Mr. Walter

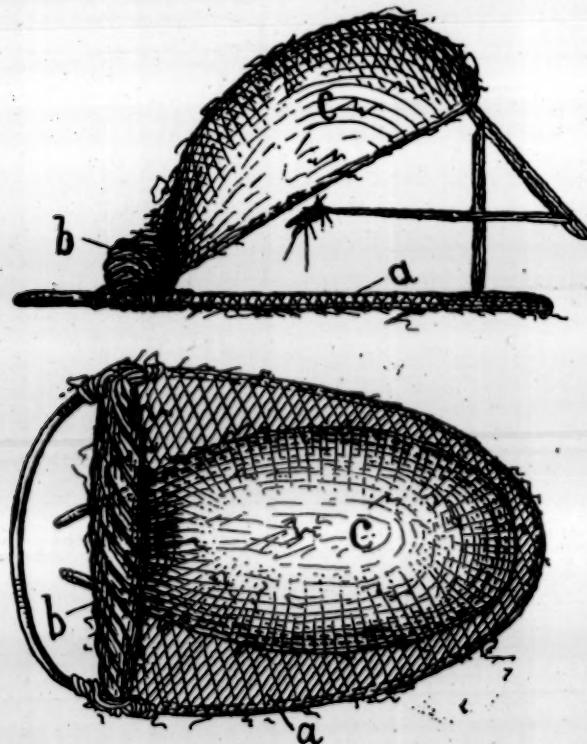
Greaves, under the head of "Nidification of the Whitethroat," remarks that it would "require a great amount of observation to definitely decide whether one sex only in this or any other species is concerned with nest building." My own observations favour the view that the female is chiefly concerned in nest building—in some species I should say the nest is built exclusively by the female; as to which sex determines the nesting site, it would be difficult to decide, but from my own limited observation, I think the female.

This summer three eggs were brought to me which had been taken out of three different nests as the eggs of the Linnet, but I found they were from the nests of the Twite. On making enquiries I found that about a dozen nests had been found within a very limited area. In this district there seems to be a local race of this species, which builds its nest on the ground amongst mat-grass (*Nardus*) and bracken (*Pteris*), and is much more social in its habits than the one which builds in the heather. A pair of House-Martins here commenced to build their nest on June 1st last, and fledged on July 23rd—fifty-three days—and at present (Sept. 11th) have a second brood, which in all probability will leave the nest in a day or two, thus covering another period of fifty-three days. I think it must have been over a month ago since the first brood left this neighbourhood, presumably on migration. It might here be remarked that this species incurs great risk in having a second brood in this upland district. In some years it must tax the resources of the parents to provide the means of subsistence for their second brood, and occasionally, it is to be feared, the young must be starved to death. It is somewhat singular that the House-Martin is more habitually double-brooded than many of our resident species, but this is an undoubted fact.—E. P. BUTTERFIELD (Bank House, Wilsden, Bradford).

**One of the Causes of our Rare Birds disappearing.**—I have just received a post-card from Leeds, asking if I had any duplicate eggs to dispose of by exchange or sale, the writer stating he was ready to deal either way, as he had a large stock of eggs of nearly all the British List; among other rare specimens, he had *ten* eggs of Golden Eagles and *fifty* of Ospreys, thus showing plainly why the Golden Eagles and Ospreys of Scotland are so steadily vanishing. If these dealers were not so well paid by silly collectors who pose as naturalists, our rarer birds would be allowed to rear their young in peace and safety, but while this craze for egg-collecting, and especially the demand for full clutches, exists, our poor birds will eventually disappear. I replied

to this writer that I would have no dealings with him or others in a similar business. — ROBERT WARREN (Ardnaree, Monkstown, Co. Cork).

**Chinese Bird-Trap.**—This primitive trap is used very successfully by Chinese up the West River, in Kwangsi Province, and no doubt in other parts of China. It seems to be much employed for catching the so-called Pekin Robin (*Copsychus saularis*), a small black-and-white bird much sought after as a songster, and often seen in cages. The trap is constructed entirely (including the spring) of



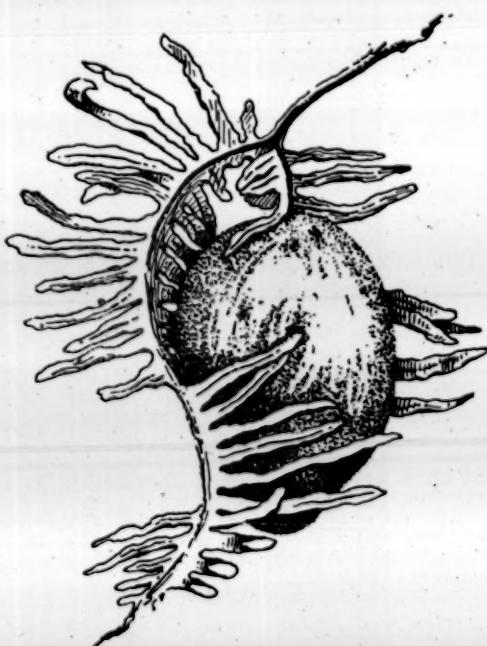
vegetable material which grows everywhere in the country. The platform (a) is made of a slender bamboo bent into an oval, the hinder part serving as a handle by which to carry the trap, whilst the larger anterior part is covered with plaited straw or sedge to form the platform. The spring (b) is a thick roll of twisted creeper or vine-stem, through which are thrust the two ends of the bamboo bent to form the frame on which is plaited the cover (c) of straw or sedges; the ends of the spring are firmly lashed to the bamboo around the edge of the platform. The catch arrangement is the ordinary figure 4, and on it is stuck a bait in the shape of a live grasshopper. The traps we examined had very good springs, and

shut with quite an unexpected snap. So it would appear that some of the patent spring mouse-traps were long ago anticipated by the Chinese, the only difference being in the material of which it is constructed.—J. C. KERSHAW.

## AMPHIBIA.

**Eggs of a Tree-Frog.**—The egg-masses of a Chinese Tree-Frog (*Rhacophorus leucomystax*) are found in great numbers on bushes overhanging pools and ponds in the beginning of the wet or hot season, as the eggs are often hung above temporary water which is only there at that time of year. The egg-masses are also attached to reeds growing in the water and other similar situations. Some are much larger and more irregular in shape than the one figured. Some are placed but a few inches above the water, and others as much as six feet. The colour is pale yellow-ochre; the texture to sight and touch is much like the spongy oothecæ of certain *Mantidæ*, but on a large scale, resembling burnt, frothy glue: the mucus secretion from the ovarian glands of the female.

The egg-masses are, however (like the *Mantis* ootheca), quite dry and firm as regards the exterior. The numerous eggs are scattered in the substance of the interior. When the eggs mature the whole mass collapses and elongates greatly, the interior deliquesces, and the tadpoles fall into the water beneath in a stream of dirty brownish liquid. The firmer texture of the exterior or "skin" of the egg-mass remains for a few days, but finally dries and shrivels up. The tadpoles acquire hind legs in about two months, and fore legs in about three months. These Tree-Frogs are wonderful quick-change artists, turning from pea-green—their normal colour—through various shades of yellow to pale cream-colour or almost white. At other times, under certain conditions, they become very dark



Egg-mass of *Rhacophorus leucomystax* in frond of fern (two-thirds of nat. size).

brown or nearly black—in fact, they rival or surpass the Chamaeleon in cryptic coloration in accordance with their surroundings.—J. C. KERSHAW.

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### O B I T U A R Y.

#### GEORGE HENRY VERRALL.

By the death of George Henry Verrall on the 16th of last month, British entomology has suffered a loss of which it is as yet too soon to speak. As many readers of this notice are doubtless aware, Verrall from his youth up had devoted himself to the study of that much neglected though most important order of insects known as Diptera, or two-winged flies, of the British representatives of which he possessed at the time of his death an unique knowledge, being recognized abroad as well as at home as the leading English authority on the subject. Verrall's career as an entomologist commenced some five and forty years ago, when, as a boy of eighteen, he began to collect flies in the garden of his father's house at Denmark Hill. The specimens thus obtained were steadily added to as opportunity offered, mainly as the result of collecting holidays spent in various parts of Great Britain; material contributions were also received from time to time from entomological friends, until to-day the cabinets in the late naturalist's home at Newmarket contain by far the finest and most complete collection of British Diptera ever brought together. It is gratifying to learn that a large part of this series of specimens has generously been bequeathed to the Trustees of the British Museum, and will shortly be added to the National Collection at South Kensington.

Realizing the importance of having reliably named Continental specimens at hand for comparison, Verrall, although confining his studies to *British* Diptera, many years ago acquired the extensive collection formed in Austria-Hungary by Herr Ferdinand Kowarz. In 1893 he also purchased the exotic flies amassed by the late Mons. J. M. F. Bigot, and thus became possessed of the types of the greater part of the species connected with the name of that well-known dipterist, as well as of a certain number of those described by his compatriot and predecessor Macquart.

As a contributor to scientific journals, Verrall was by no means prolific, and his published memoirs probably number less than thirty, a total which would doubtless have been considerably augmented, however, had it not been for the great work shortly to be referred to, which of late years left little leisure for other tasks.

His first paper, contributed to the pages of the 'Entomologist's Monthly Magazine' at the age of twenty, appeared in June, 1868, and was followed at longer or shorter intervals by other articles from his pen, the last of his writings to be published making its appearance in April of the present year. Conservative by nature as well as in politics, the subject of this appreciation was rightly opposed to unnecessary changes in nomenclature, and never failed to deprecate anything in the shape of hasty or ill-considered work, while carelessness and incompetence found in him a somewhat unsparing critic.

Leaving to the entomological journals the task of enumerating in detail Verrall's contributions to the literature of Diptera, some reference must now be made to his more important publications. 'A List of British Diptera' (1888), of which a second edition, revised and expanded, appeared in 1901, proved a boon to many a student, and for the first time provided those entomologists who devote themselves to the study of our three thousand odd species of British flies with a reliable basis for their investigations.

It was not until almost the last decade of his life that Verrall commenced to produce his monumental work on 'British Flies,' which, as planned by its author, was intended to consist of fourteen volumes. The first of these to be published made its appearance on January 1st, 1901, and at the present time its only successor is a volume issued exactly eight years later (on January 1st, 1909). It is on these two books—each of large octavo size, consisting of some eight hundred pages, admirably illustrated with text-figures by the author's nephew, Mr. J. E. Collin, and, in the case of the later of the two, largely in small type—that Verrall's reputation as an entomologist will rest. As to the verdict of posterity there need be no apprehension. *Thoroughness* was the leading characteristic of all of Verrall's work, and the "capacity for taking pains," which was his in a marked degree, prevented him from publishing anything hasty or unreliable. Such a production as this naturally has the defects of its qualities. The two volumes that Verrall has left behind him, which deal chiefly with some of our larger and more conspicuous flies, are works of reference, whose very weight and bulk would prevent their use anywhere but in the study; and the ordinary British collector, who is not much interested in the details of synonymy, might possibly have preferred a handbook containing nothing but synoptic tables for the determination of species, and including the whole Order. To those who wish to verify the designations of their captures for themselves, however, the published volumes of 'British

Flies' are invaluable; and, since British ideas as regards the nomenclature of Diptera are not invariably the same as those current on the Continent of Europe, the books should prove indispensable also to Continental dipterists.

E. E. AUSTEN.

In addition to what has been so well said by Mr. Austen (*supra*) as to the scientific status of our late friend, something may still be recorded as to his very human personality.

He was born on the 7th February, 1848, and passed away at his Newmarket residence on September 16th last, being thus in his sixty-fourth year of age. George Verrall was entomologist, sportsman, and politician, and it was in one of these capacities that most of his friends knew him best. Entomology was the charm of his life; probably everything else gave way to it, and I well remember a good many years ago when, being with him in the weighing-room at Yarmouth races, he suddenly seized a fly from the window and told me it was a good specimen of a rare species. He had long studied the British Diptera, and joined our mutual friend Edward Waterhouse at Rannoch in 1870, when he collected so successfully that "it took Verrall years to clear up all his captures on that journey." It was also about this time that my same informant has often told me of a favourite black and white rat "that always sat on the table by George's side and took tea with him." This rodent also frequently journeyed with him in his pocket. Verrall was President of the Entomological Society in 1899 and 1900, but where he was really king was at the Entomological Club. His yearly supper-party at the Holborn Restaurant was the Mecca of "insect men," and his only greed I ever noticed was that in hospitality, for he was always disappointed when his guests were numbered in less than three figures. Those yearly gatherings, continued so long, will make many of us remember him best as we knew the kindly president in that club chair.

As a sportsman he was a great authority in racing matters, and was a turfite in the real and best sense of that word; but here the sportsman ended, he did not to my knowledge angle or shoot; a day's entomologizing was always to him real recreation, and he enjoyed his billiards.

In politics he was a true but broad-minded Conservative, worked hard and well for his cause and was an ardent Tariff Reformer. He represented the Newmarket Division for one of the recent short sessions. It was, however, because he was so truly human that he was generally loved, and it is that which makes so many of us feel his loss.

W. L. D.

## NOTICES OF NEW BOOKS.

*A Vertebrate Fauna of Scotland: The Tweed Area, including the Farne Islands.* By A. H. EVANS, M.A., F.Z.S. Edinburgh: David Douglas.

THIS forms the eleventh volume of what may well be called Harvie-Brown's History of the Vertebrate Fauna of Scotland. It is written by Mr. A. H. Evans, the well-known ornithologist and author of the volume on Birds in the "Cambridge Natural History." The Tweed area, as treated in this volume, "is almost co-extensive with the shires of Berwick, Roxburgh, Selkirk, and Peebles, while it penetrates East Lothian and Midlothian to a very small extent, and includes a considerably greater portion of Northumberland." The Mammals, Birds, and Reptilia are described; the ichthyology of the district is so closely connected with that of the "Forth" area that it has been decided to leave the Fishes to be treated in a forthcoming volume on the latter from the pen of Mr. William Evans.

The introduction contains some most interesting and useful biographical details of well-known Border naturalists, most of whose names are now well known to all of us over a far wider area. The work itself is a record of both personal observation and wide, and, what is more, judicious compilation. To read, to assimilate, and to sift the more and more prolific records found under the titles of an ever-increasing bibliography requires, especially in the ornithological writer, many of the qualifications of the accomplished historian. By mistaken observations, honestly recorded, much heresy has crept within the lists of our British faunal districts, and the conscientious naturalist who undertakes a work of this dimension must needs walk warily. The names of both Editor and Author of this volume are sufficient to satisfy the most exacting that all that knowledge and caution can do has been done. This volume is not of the nature of a Border foray, but exhibits a more steady and complete conquest of the vertebrate fauna of the Tweed area.

The illustrations are beautiful and well chosen. They represent well-known scenes, familiar to many of us, and to some who scarcely expect to visit them again. We must all in time become more or less members of the well-derided cult of "arm-chair naturalists"; to such these pictures have a reminiscent charm.

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*The Life of Crustacea.* By W. T. CALMAN, D.Sc.  
Methuen & Co., Ltd.

IN these pages (1909, p. 238) a notice appeared of Dr. Calman's volume on Crustacea in Sir Ray Lankester's series entitled "A Treatise on Zoology." In that notice a pious wish was expressed that the author might in another publication fully describe the Crustacea "from the taxonomical, bionomical, and distributional standpoint." We scarcely suspected that such a volume was already in view when those remarks were made, and now we possess the very publication desired. In fact, it is so complete an introduction to a great division of the Arthropoda, and is written in so comprehensive a manner in relation to current biological conclusions and suggestions, that it is a work that might be made a standard for a new departure in zoological education. In all good schools where science is taught as a polite accessory and not as the main subject, zoology receives harsh and more or less inadequate treatment. Some general text-book is used to cover the whole animal kingdom, usually of so technical a nature as to be bewildering and repellent to students to whom that science is not considered the one thing needful, a method which almost seems designed to warn an average youth from the zoological field. We are not referring to a scientific curriculum, but to an ordinary general education. If this book of Dr. Calman's could be made a compulsory study for at least the first twelve months in the subjects of a necessary education, and though the study for the time be thus reduced to the Crustacea alone, such a grasp would be obtained in zoological method as would supply a key to other orders, and incite observation and research. But it must be thoroughly assimilated, and a Lobster, easily obtained, can be made the main subject for preliminary dissection.

We have no wish to puff this volume, but we would be glad to think that an educational use should be made of it. Dr. Calman, having written his two books on the subject, must now undertake the third—a complete history of the British Crustacea. We have many books on British birds and insects; the British crustaceans await their more up-to-date description, especially from their bionomical standpoint.

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*The Life of the Common Gull; told in Photographs.* By  
C. RUBOW. Witherby & Co.

THIS is one of the well-illustrated booklets issued by Messrs. Witherby & Co., and is translated from the Danish. We give one extract as representative:—"A mysterious incident sometimes occurs at the breeding-place: a gull is sentenced to death and executed by its comrades. What wrong has it done? Who prosecutes? How is it sentenced? Such a scene as the following may be witnessed:—The weather is dead calm, and the sun burns on the sand, the heavy heat has brought the colony to an uncommon degree of silence, parents and youngsters are sitting together half-sleeping. Suddenly fifty to one hundred gulls fly up in the air and collect together. Then one swoops down on to one of the gulls sitting on the sand, and strikes him hard in the back of the neck. A second, a third, and many more, one after the other, quickly follow the first. The ill-fated bird attempts to defend itself—to fly away, but in vain. It is struck down; again and again the blows fall on the same spot in its neck. Soon it becomes exhausted, and with outstretched wings lies on the ground, crying angrily and furiously no more, but wailing like a sick child. Flapping along, it tries with its last strength to reach a hiding-place, but its enemies are constantly overhead. Finally it succeeds in dragging itself into shelter under a shrub, but its fate is sealed, and a few minutes afterwards it is dead. There is only one wound upon it, but that is a deadly one in the back of the neck, and penetrates right into the vertebræ."

## EDITORIAL GLEANINGS.

**HEDGEHOGS SUCKING Cows?**—Mr. Claude Morley, in the 'East Anglian Daily Times' of Sept. 30th last, writes:—"Mr. John Cockaday, of the Queen's Head Hotel, at Stradbroke, is the first person known to me to confirm the accuracy of this habit. Everyone has heard someone else say that such is true, but no confirmation was forthcoming till Mr. Cockaday kindly wrote that he 'has on several occasions seen a hedgehog sucking a cow, when farming on Mr. Eustace Gurney's Sproston Hall Estate, in Norfolk.' To-day he gave me the interesting details of one of these cases:—Five years ago he noticed a cow lying down, and on approaching noticed that a hedgehog (very common in that neighbourhood) was sucking. This was distinctly visible at fifteen or twenty yards, and the contraction of the cheeks in the act of suction also was evident. The important point noticed was that only the extremity of the mouth touched the teat, and the teeth were not in contact at all, which obviates the theory advanced by many naturalists that their conformation precluded the possibility of such a sucking habit. In this case, after a short time, the teeth would appear to have actually come into play, for the cow jumped to her feet in a fright and kicked vigorously at the hedgehog, which Mr. Cockaday's dog promptly slew."

Mr. Millais, in his 'Mammals of Great Britain and Ireland' (vol. i., p. 118), remarks on this matter: "Cows in full lactation often have drops of milk clinging to the udders, and a hedgehog snouting round for insects might well come across this unexpected delicacy and lick it off. A hedgehog tastes most things that come in its way." Major Barrett-Hamilton, in his 'History of British Mammals' now in course of publication, writes (Part vii., p. 69):—"But careful naturalists, remembering amongst other things, the small size of the hedgehog's mouth, will probably await further evidence before they place the sucking of cows amongst the habitual accomplishments of the animal; and I am inclined to think that the story may be classed with the many other mythical narratives which make the work of the older naturalists more picturesque than trustworthy."



